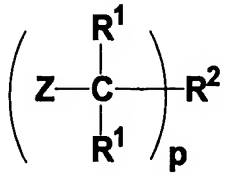
IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 3 and 5-6 have been amended and claims 9-15 have been added as follows:

Listing of Claims:

Claim 1 (original): A method of producing a soluble polyfunctional vinyl aromatic polymer having a controlled molecular weight distribution, comprising performing cationic polymerization of a monomer component containing 20 to 100 mol% of a divinyl aromatic compound (a) at a temperature of 20 to 120°C in an organic solvent in the presence of a donor component selected from the group consisting of a quaternary ammonium salt, an ether-based compound having 3 or more carbon atoms, a thioether-based compound having 3 or more carbon atoms, and a sulfoxide-based compound having 2 or more carbon atoms with a Lewis acid catalyst and an initiator represented by the following general formula (1):

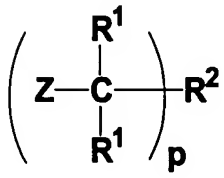


(1)

wherein R^1 represents a hydrogen atom or a monovalent hydrocarbon group having 1 to 6 carbon atoms, R^2 represents an aromatic hydrocarbon group or aliphatic hydrocarbon group of p-valence, Z represents a halogen atom, or an alkoxy group or acyloxy group having 1 to 6 carbon atoms, p represents an integer of 1 to 6, and when a plurality of R^1 and Z are present in a molecule, R^1 and Z

may be identical to or different from each other.

Claim 2 (original): A method of producing a soluble polyfunctional vinyl aromatic polymer having a controlled molecular weight distribution, comprising performing cationic polymerization of a monomer component containing 20 to 100 mol% of a divinyl aromatic compound (a) at a temperature of 20 to 120°C in at least one organic solvent having a dielectric constant of 2 to 15 with a Lewis acid catalyst and an initiator represented by the following general formula (1):



(1)

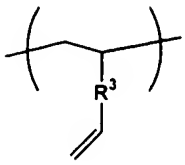
wherein R^1 represents a hydrogen atom or a monovalent hydrocarbon group having 1 to 6 carbon atoms, R^2 represents an aromatic hydrocarbon group or aliphatic hydrocarbon group of p-valence, Z represents a halogen atom, or an alkoxy group or acyloxy group having 1 to 6 carbon atoms, p represents an integer of 1 to 6, and when a plurality of R^1s and Zs are present in a molecule, R^1s and Zs may be identical to or different from each other.

Claim 3 (currently amended): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 1 [[or 2]], wherein the monomer component comprises 30 to 99 mol% of a divinyl aromatic compound (a) and 1 to 70 mol% of a monovinyl aromatic compound (b).

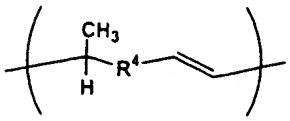
Claim 4 (original): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 1, characterized in that the donor component comprises at least one compound selected from the group consisting of a tetraalkylammonium halide, a dialkyl ether having 3 or more carbon atoms, a bisalkoxy alkyl, a cycloalkyl ether, a biphenyl ether-based compound, a dialkyl thioether, a bisthioalkoxy alkyl, a cycloalkyl thioether, a biphenyl sulfide-based compound, a thioether-based compound, and a dialkyl sulfoxide-based compound having 2 or more carbon atoms.

Claim 5 (currently amended): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 1 [[or 2]], characterized in that the Lewis acid catalyst comprises a halogenated metal having Lewis acidity.

Claim 6 (currently amended): A method of producing a soluble polyfunctional vinyl aromatic polymer according to ~~any one of claims 1 to 5~~ claim 5, wherein the soluble polyfunctional vinyl aromatic polymer has a mole fraction of structural units derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):

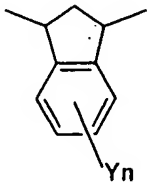


(a1)



(a2)

wherein R^3 and R^4 each independently represent an aromatic hydrocarbon group having 6 to 30 carbon atoms, the mole fraction satisfying the following expression (a1)/[(a1)+(a2)] ≥ 0.5, has 0 to 20 mol% of an indan structure represented by the following general formula (2) in a main chain skeleton:

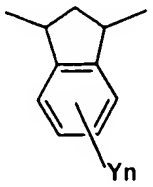


(2)

wherein Y represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring, and n represents an integer of 0 to 4, has a number average molecular weight Mn of 300 to 100,000, has a molecular weight distribution (Mw/Mn) represented by a ratio of a weight average molecular weight Mw to the number average molecular weight Mn of 10.0 or less, and is soluble in toluene, xylene, tetrahydrofuran, dichloroethane, or chloroform.

Claim 7 (original): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 1, wherein the polymerization is performed in an organic solvent capable of dissolving a soluble polyfunctional vinyl aromatic copolymer by using the donor component, the Lewis acid catalyst, and the initiator represented by the general formula (1) within a range of 0.001 to 100 moles of the Lewis acid and 0.001 to 10 moles of the donor component per 1 mole of the initiator.

Claim 8 (original): A soluble polyfunctional vinyl aromatic copolymer comprising an indan structure represented by the following general formula (2) in a main chain skeleton:

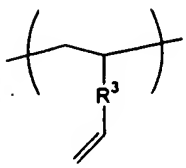


(2)

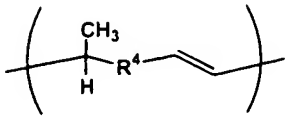
wherein Y represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring, and n represents an integer of 0 to 4, characterized in that:

20 mol% or more of a repeating unit derived from the divinyl aromatic compound (a) is included in the polyfunctional vinyl aromatic copolymer comprising structural units derived from monomers formed of a divinyl aromatic compound (a) and a monovinyl aromatic compound (b); and

a mole fraction of structural units derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):



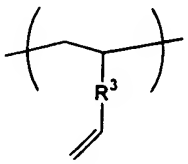
(a1)



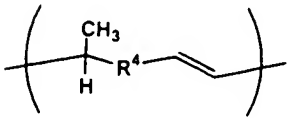
(a2)

wherein R^3 and R^4 each independently represent an aromatic hydrocarbon group having 6 to 30 carbon atoms, satisfies the following expression (a1)/[(a1)+(a2)] ≥ 0.5.

Claim 9 (new): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 2, wherein the soluble polyfunctional vinyl aromatic polymer has a mole fraction of structural units derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):

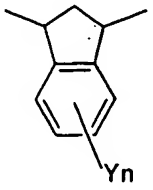


(a1)



(a2)

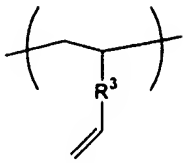
wherein R^3 and R^4 each independently represent an aromatic hydrocarbon group having 6 to 30 carbon atoms, the mole fraction satisfying the following expression (a1)/[(a1)+(a2)] ≥ 0.5, has 0 to 20 mol% of an indan structure represented by the following general formula (2) in a main chain skeleton:



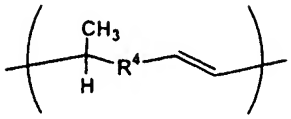
(2)

wherein Y represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring, and n represents an integer of 0 to 4, has a number average molecular weight Mn of 300 to 100,000, has a molecular weight distribution (Mw/Mn) represented by a ratio of a weight average molecular weight Mw to the number average molecular weight Mn of 10.0 or less, and is soluble in toluene, xylene, tetrahydrofuran, dichloroethane, or chloroform.

Claim 10 (new): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 3, wherein the soluble polyfunctional vinyl aromatic polymer has a mole fraction of structural units derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):

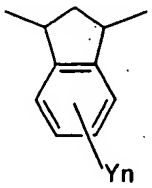


(a1)



(a2)

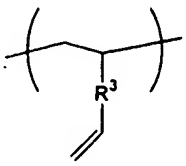
wherein R^3 and R^4 each independently represent an aromatic hydrocarbon group having 6 to 30 carbon atoms, the mole fraction satisfying the following expression (a1)/[(a1)+(a2)] ≥ 0.5, has 0 to 20 mol% of an indan structure represented by the following general formula (2) in a main chain skeleton:



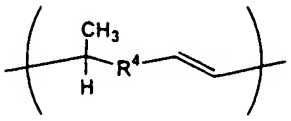
(2)

wherein Y represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring, and n represents an integer of 0 to 4, has a number average molecular weight Mn of 300 to 100,000, has a molecular weight distribution (Mw/Mn) represented by a ratio of a weight average molecular weight Mw to the number average molecular weight Mn of 10.0 or less, and is soluble in toluene, xylene, tetrahydrofuran, dichloroethane, or chloroform.

Claim 11 (new): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 4, wherein the soluble polyfunctional vinyl aromatic polymer has a mole fraction of structural units derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):

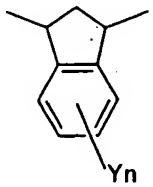


(a1)



(a2)

wherein R^3 and R^4 each independently represent an aromatic hydrocarbon group having 6 to 30 carbon atoms, the mole fraction satisfying the following expression (a1)/[(a1)+(a2)] ≥ 0.5, has 0 to 20 mol% of an indan structure represented by the following general formula (2) in a main chain skeleton:



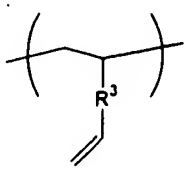
(2)

wherein Y represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic

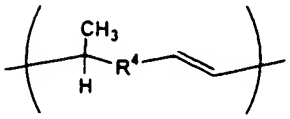
hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring, and n represents an integer of 0 to 4, has a number average molecular weight Mn of 300 to 100,000, has a molecular weight distribution (Mw/Mn) represented by a ratio of a weight average molecular weight Mw to the number average molecular weight Mn of 10.0 or less, and is soluble in toluene, xylene, tetrahydrofuran, dichloroethane, or chloroform.

Claim 12 (new): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 2, wherein the monomer component comprises 30 to 99 mol% of a divinyl aromatic compound (a) and 1 to 70 mol% of a monovinyl aromatic compound (b).

Claim 13 (new): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 12, wherein the soluble polyfunctional vinyl aromatic polymer has a mole fraction of structural units derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):

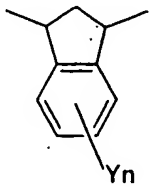


(a1)



(a2)

wherein R^3 and R^4 each independently represent an aromatic hydrocarbon group having 6 to 30 carbon atoms, the mole fraction satisfying the following expression (a1)/[(a1)+(a2)] ≥ 0.5, has 0 to 20 mol% of an indan structure represented by the following general formula (2) in a main chain skeleton:

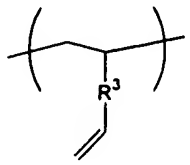


(2)

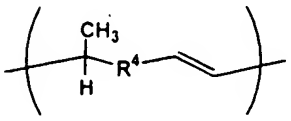
wherein Y represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring, and n represents an integer of 0 to 4, has a number average molecular weight Mn of 300 to 100,000, has a molecular weight distribution (Mw/Mn) represented by a ratio of a weight average molecular weight Mw to the number average molecular weight Mn of 10.0 or less, and is soluble in toluene, xylene, tetrahydrofuran, dichloroethane, or chloroform.

Claim 14 (new): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 2, characterized in that the Lewis acid catalyst comprises a halogenated metal having Lewis acidity.

Claim 15 (new): A method of producing a soluble polyfunctional vinyl aromatic polymer according to claim 14, wherein the soluble polyfunctional vinyl aromatic polymer has a mole fraction of structural units derived from the divinyl aromatic compound (a) and represented by the following formulae (a1) and (a2):

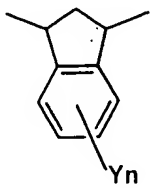


(a1)



(a2)

wherein R^3 and R^4 each independently represent an aromatic hydrocarbon group having 6 to 30 carbon atoms, the mole fraction satisfying the following expression (a1)/[(a1)+(a2)] ≥ 0.5, has 0 to 20 mol% of an indan structure represented by the following general formula (2) in a main chain skeleton:



(2)

wherein Y represents a saturated or unsaturated aliphatic hydrocarbon group, an aromatic

hydrocarbon group, an aromatic ring condensed to a benzene ring, or a substituted aromatic ring, and n represents an integer of 0 to 4, has a number average molecular weight Mn of 300 to 100,000, has a molecular weight distribution (Mw/Mn) represented by a ratio of a weight average molecular weight Mw to the number average molecular weight Mn of 10.0 or less, and is soluble in toluene, xylene, tetrahydrofuran, dichloroethane, or chloroform.